An International Journal

computers & mathematics

with applications

Editor-in-Chief: Ervin Y. Rodin

List of Contents and Author Index

Volume 23, 1992

pergamon press
oxford · new york · seoul · tokyo

An International Journal

computers & mathematics WITH APPLICATIONS

Editor-in-Chief:
Ervin Y. Rodin

Editorial Assistant: **Florence A. Schick**

Department of Systems Science and Mathematics
Campus Box 1040, Washington University
1 Brookings Drive, St Louis
MO 63130, U.S.A.

Tel.: 314-935-6007 or 935-5806
Fax: 314-935-4434
E.mail: rodin@rodin.wustl.edu
uunet!wuarchive!rodin.wustl.edu!rodin
rodin%rodin.wustl.edu@wugate.wustl.edu

Publishing Office

Pergamon Press Ltd, Pergamon House, Bampfylde Street, Exeter EX1 2AH, England [*Tel.* (0392) 51558; *Fax* 425370].

Advertising and Subscription Offices

North America: Pergamon Press Inc., 395 Saw Mill River Road, Elmsford, NY 10523, U.S.A.
Rest of the World: Pergamon Press Ltd, Headington Hill Hall, Oxford OX3 0BW, England [*Tel.* (0865) 794141; *Fax* 60285].

Published 2 issues/month in 2 volumes

Subscription Rates

Annual institutional subscription rate (1992): £805.00 (US$1460.00). Two-year institutional rate (1992/93): £1529.50 (US$2774.00). Sterling prices are definitive. U.S. dollar prices are quoted for convenience only, and are subject to exchange rate fluctuation. Prices include postage and insurance and are subject to change without notice. Subscription rates for Japan are available on request. Members of the *American Mathematical Society* may order personal subscriptions at a concessional rate, details of this rate are available upon request.

Back Issues

Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Pergamon Press offices.

Copyright © 1992 Pergamon Press Ltd

It is a condition of publication that manuscripts submitted to this journal have not been published and will not be simultaneously submitted or published elsewhere. By submitting a manuscript the authors agree that the copyright for their article is transferred to the publisher if and when the article is accepted for publication. However, assignment of copyright is not required from authors who work for organizations which do not permit such assignment. The copyright covers the exclusive rights to reproduce and distribute the article, including reprints, photographic reproductions, microform or any other reproductions of similar nature and translations. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the copyright holder.

PHOTOCOPYING INFORMATION FOR USERS IN THE U.S.A.

The Item-fee Code for this publication indicates that authorization to photocopy items for internal or personal use is granted by the copyright holder for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service provided the stated fee for copying beyond that permitted by Section 107 or 108 of the U.S. Copyright Law is paid. The appropriate remittance of $5.00 per copy per article is paid directly to the Copyright Clearance Center Inc., 27 Congress Street, Salem, MA 01970, U.S.A. The copyright owner's consent does not extend to copying for general distribution, for promotion, for creating new works, or for resale. Specific written permission must be obtained from the publisher for such copying.

The Item-fee Code for this publication is:
0097-4943/92 $5.00 + 0.00

♾™ The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1984.

List of Contents

NUMBER 1

E. Y. Rodin	1	Speed of publication—An editorial
T.-W. Hou, S. R. Tsai and **L. M. Tseng**	3	Adaptive and fault-tolerant routing algorithms for high performance 2D torus interconnection network
R. Rach, G. Adomian and **R. E. Meyers**	17	A modified decomposition
M. S. El Naschie	25	Peano dynamics as a model for ergodic and strange nonchaotic behaviour
J. Rifà i Coma	35	All *s*-sums of type 2 or 3 are triple-sum sets
S. B. Pomeranz	45	A solitary wave application of an iterative method for nonlinear elliptic eigenvalue problems
G. Adomian and **R. Rach**	51	A further consideration of partial solutions in the decomposition method
J.-Y. Liu and **H.-S. Yan**	65	Geometry design of trapezoidal threaded variable pitch lead screws
S. González-Pinto, L. Casasús and **P. González-Vera**	75	Two uniform schemes for the singularly perturbed Riccati equation
K.-L. Chung	87	Solving hyperbolic PDE's on hypercubes
G. Tsiotras and **C. S. Tapiero**	89	WIP and CSP-1 quality control in a tandem queueing production system
M. Rouff	103	The computation of C^k spline functions
Y. Yavin, C. Frangos and **J. P. Fourie**	111	The performance of a projectile which uses a bang-bang type guidance law: Part 1

NUMBER 2–5

SEMANTIC NETWORKS IN ARTIFICIAL INTELLIGENCE (Part 1)

F. W. Lehmann	ix	Preface
F. W. Lehmann	1	Semantic Networks

INVITED RESEARCH FAMILY SUMMARIES

S. L. Lytinen	51	Conceptual Dependency and its descendants
J. F. Sowa	75	Conceptual Graphs as a universal knowledge representation
N. Cercone, R. Goebel, J. de Haan and **S. Schaeffer**	95	The ECO Family
W. A. Woods and **J. G. Schmolze**	133	The KL-ONE Family
R. H.Thomason	179	NETL and subsequent path-based inheritance theories
Y. Wilks and **D. Fass**	205	The Preference Semantics Family
J. Mylopoulos	223	The PSN Tribe
S. C. Shapiro and **W. J. Rapaport**	243	The SNePS Family

ARTICLES

J. A. Hendler	277	Massively-parallel marker-passing in semantic networks
L. Shastri	293	Structured connectionist models of semantic networks
C. Brink and **R. A. Schmidt**	329	Subsumption computed algebraically
H. Mili and **R. Rada**	343	A model of hierarchies based on graph homomorphisms
G. McCalla, J. Greer, B. Barrie and **P. Pospisil**	363	Granularity hierarchies

NUMBER 6–9

SEMANTIC NETWORKS IN ARTIFICIAL INTELLIGENCE (Part 2)

J. A. Markowitz, J. T. Nutter and **M. W. Evens**	377	Beyond IS-A and PART-WHOLE: More semantic network links
B. M. Slator	391	Sense and preference
S. L. Lytinen	403	A unification-based, integrated natural language processing system
R. Rucker and **T. A. Aldowaisan**	419	A design approach for constructing engineering scenario maps
R. T. Hartley	441	A uniform representation for time and space and their mutual constraints

D. A. Randell and **A. G. Cohn**	459	Exploiting lattices in a theory of space and time
A. G. Cohn	477	Completing sort hierarchies
R. Wille	493	Concept lattices and conceptual knowledge systems
A. Hautamäki	517	A conceptual space approach to semantic networks
L. Padgham	527	Defeasible inheritance: A lattice based approach
E. Franconi, B. Magnini and **O. Stock**	543	Prototypes in a hybrid language with primitive descriptions
H. Ehrig, A. Habel and **H.-J. Kreowski**	557	Introduction to graph grammars with applications to semantic networks
R. Levinson	573	Pattern associativity and the retrieval of semantic networks
H. Boley	601	Declarative operations on nets
D. D. Roberts	639	The Existential Graphs
R. W. Burch	665	Valental aspects of Peircean Algebraic Logic
R. Marty	679	Foliated semantic networks: Concepts, facts, qualities
G. P. Zarri	697	The "descriptive" component of a hybrid knowledge representation language
R. Nado and **R. Fikes**	719	Saying more with frames: Slots as classes
A. C. Graesser, S. Gordon and **L. E. Brainerd**	733	QUEST: A model of question answering
	747	Index

NUMBER 10

E. Y. Rodin	1	Speed of publication—An editorial
L. Garnett and **A. U. Tansel**	3	Equivalence of the relational algebra and calculus for nested relations
S.-A. Yang and **C.-K. Chen**	27	Magnetohydrodynamic effects upon momentum transfer on a continuously moving flat plane
M. A. El-Affendi	35	Estimating computer performance metrics when the service and interarrival times are of the truncated normal type
Y. Yavin	41	A search for a randomly moving object: A numerical study
H. M. Srivastava, R. K. Saxena and **Z. Hussain**	51	Some generating functions for the Jacobi polynomials

Y. Yavin and C. Frangos	57	An optimal selection policy for a flexible manufacturing cell feeding several production lines
L. Lustman, B. Neta and W. Gragg	65	Solution of ordinary differential initial value problems on an intel hypercube
Y. Yavin and C. Frangos	73	Optimal selection and control strategies for a flexible manufacturing and assembly system
G. Adomian and R. Rach	79	Nonlinear transformation of series—Part II
M.-H. Chou	85	Hopf bifurcation in a reaction-diffusion system governed by the Fitz-Hugh-Nagumo equations
M. B. Boisen, Jr., G. V. Gibbs and Z. G. Zhang	99	An application of graph theory to the estimation of bond numbers in crystals

NUMBER 11

E. Y. Rodin	1	Speed of publication—An editorial
D. A. Murio, D. Hinestroza G. and C. E. Mejía	3	New stable numerical inversion of Abel's integral equation
C. Chiccoli, S. Lorenzutta and G. Maino	13	Concerning some integrals of the generalized exponential-integral function
M. Eck and D. Lasser	23	B-spline Bézier representation of geometric spline curves: Quartics and quintics
O. Rojo and R. Soto	41	New conditions for the additive inverse eigenvalue problem for matrices
J. A. Snyman, C. Frangos and Y. Yavin	47	Penalty function solutions to optimal control problems with general constraints via a dynamic optimisation method
J. Sztrik	57	Modelling of a single bus multiprocessor system operating in Markovian environments
Y. J. Wang, L. S. Shieh and J. W. Sunkel	67	Robust stabilization, robust performance, and disturbance attenuation for uncertain linear systems
F. Mazzia and D. Trigiante	81	Numerical methods for second order singular perturbation problems
J. L. Howland and R. Vaillancourt	91	Rational transformation from Schur to Jordan form

NUMBER 12

E. Y. Rodin	1	Speed of publication—An editorial
Y.-K. Kwok	3	Stability analysis of six-point finite difference schemes for the constant coefficient convective-diffusion equation
Ç. K. Koç	13	A parallel algorithm for exact solution of linear equations via congruence technique
J. P. Pascal	25	Similarity solutions for axisymmetric plane radial power law fluid flows through a porous medium
J. A. Sjogren	43	Closed-form solution of decomposable stochastic models
G. Vanden Berghe, H. De Meyer and **M. Van Daele**	69	A parallel approach to the modified Numerov-like eigenvalue determination for Sturm-Liouville problems
R. Vulanović and **P. Lin**	75	Numerical solution of quasilinear attractive turning point problems
Z. Michalewicz, C. Z. Janikow and **J. B. Krawczyk**	83	A modified genetic algorithm for optimal control problems
J.-C. Yao	95	Nonlinear inequalities in Banach spaces
	99	Book Reports